Practical Parasitology Manual

Lab 1: Introduction

Over 70 different species of parasites, belonging to two major groups (Protozoa and Helminths), can be found in various parts of the human body.

Parasitosis may result from exposure via one or more of the following sources:
1) Contaminated soil or water
2) Food containing the immature infective stage of the parasite
3) A blood sucking insect
4) Another person, their clothing, bedding, or the immediate environment that they have contaminated;
6) Oneself.

Competent laboratory work is dependent on several factors:
1) Satisfactory specimens
2) Safe and adequate facilities, including a good quality microscope
3) Personnel trained in examining specimens and accurately identifying organisms
4) Personal trained in safety and protection from stool, body fluid and blood-borne pathogens (Universal Precautions).

Specimen types
The most common types of body material submitted for parasitology examination are stools and blood, however other materials, such as anal swabs, urines, aspirates, abscesses or respiratory specimens, surgical specimens and biopsies may all be submitted in certain cases.

Quality work
Quality work is based on two principals; quality control (QC) and quality assurance (QA).
Quality control: ensures that each step of the process is done properly,
Quality assurance: ensures that the entire process produces the correct result.

LABORATORY SAFETY GUIDELINES
TREAT ALL SAMPLES AS BIOHAZARDOUS MATERIAL

Wear gloves when required
• Never mouth pipette
• No smoking or consuming food or drink anywhere in the laboratory
• Do not work with uncovered opened cuts or broken skin. Cover with suitable dressing and latex gloves.
• Do not create aerosols. Use extreme care when operating centrifuges, stirrers, pipetters etc.
• Wipe off benches in your working area with suitable disinfectant before and after each day'swork.
• Do not wear lab coats outside the lab.
• Do not place personal items such as eyeglasses on workbench.
• Beware of reactive and poisonous chemicals and handle them with respect.

• All fixatives and chemicals should be properly labelled.
• Know in advance where you nearest fire extinguishers are located.
• Always wash your hands before leaving the laboratory.
• Be aware that all specimens may contain biohazardous agents and protect yourself accordingly.
• Clean up any spills (generally with 1% bleach) before proceeding
• Make sure your co-workers are aware of any chemical or biological hazards that exist.

COLLECTION AND PRESERVATION OF STOOL SPECIMENS

The generation of clinically meaningful test results must begin with stringent criteria for specimen acceptance or rejection and specimen handling. Unless specimens are properly labeled, collected and processed, time and reagents will be wasted and the test results may mislead the physician. Ensuring proper specimen collection and processing is part of the laboratory "Continuous Quality Improvement Program".

"PATIENTS SHOULD BE GIVEN WRITTEN AND VERBAL INSTRUCTIONS TO FACILITATE PROPER COLLECTION OF SAMPLES"

Factors Affecting Samples

Fecal samples should be collected in clean specimen containers with tight fitting lids to prevent accidental spillage. The specimens should not be contaminated with water or urine, or retrieved from the toilet bowl because the motile forms of protozoa will be destroyed. In addition, free living organisms may be present in the water and would cause contamination of the specimen. Samples contaminated in this manner are not suitable specimens and would not be accepted by the laboratory

Criteria for Rejection:

• There is *any* sign of leakage
• They are not correctly labeled
• There is any sign of contamination (water, urine, non-fecal debris)
• It is known that the patient had been taking non absorbable anti-diarrheal drugs, mineral oil based laxatives, or antimicrobials within 1 week.
• Liquid fecal samples greater than 60 minutes after passage before processing or fixation.
• Formed stools greater than 24 hours after passage before processing or fixation.

Type and Stability of Stool Specimens

Fresh stools are essential for the recovery of motile trophozoites which are most likely to be found in the order of liquid > soft > formed stools.
• Liquid and soft stools should be examined and/or preserved in SAF fixative within 30 minutes and one hour of passage respectively.
• Formed stools should be examined and/or preserved in SAF fixative within 12 hours of passage.

Preservation of Stools, and Fixatives

Because of the workload within the laboratory or transit distance/time for the specimen to reach the laboratory, most laboratories recommend preservation of the specimens. Sodium acetate acetic-acid formalin (SAF) is useful fixative for both concentration and permanent stains and is relatively safe and easy to use compared to other fixatives.